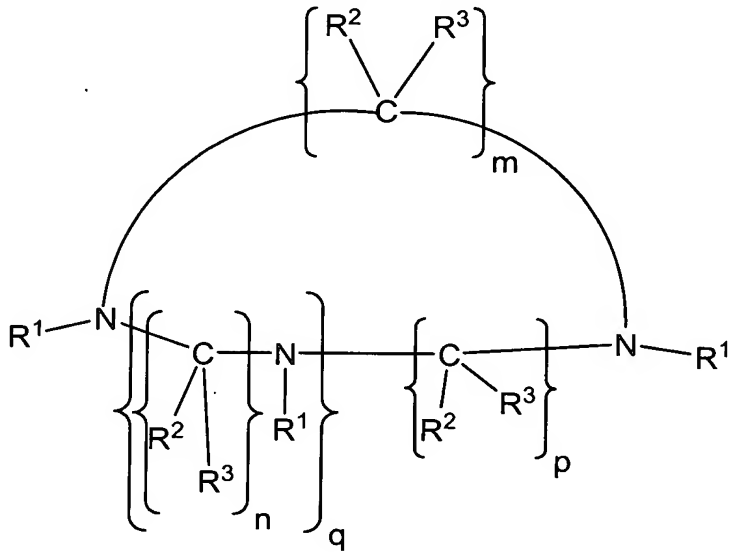
WHAT IS CLAIMED IS:

1. A pharmaceutical composition comprising (a) a complex of (i) a cyclic polyaza chelator having complexing affinity for first transition series elements and (ii) a cation of a member selected from the group consisting of calcium and magnesium and (b) a pharmacologically acceptable carrier.

2. The pharmaceutical composition of claim 1 in which said cyclic polyaza chelator is a chelator having the formula



(I)

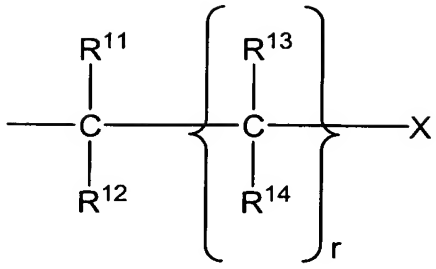
wherein:

m, n, and p are each independently 2 or 3;

q is 1 or 2;

R^2 and R^3 are each independently selected from the group consisting of H, alkyl, alkenyl, aryl, arylalkyl, alkoxy, alkylthio, alkenoxy, alkenylthio, aryloxy, arylthio, alkyl interrupted by oxa, alkenyl interrupted by oxa, alkyl interrupted by thia, alkenyl interrupted by thia, aryloxyalkyl, alkoxyaryl, aminoalkyl, aminoalkenyl, aminoaryl, aminoarylalkyl, hydroxyalkyl, hydroxyalkenyl, hydroxyaryl, hydroxyarylalkyl, and halogen-substituted versions thereof;

R^1 is a member selected from the group consisting of R^2, R^3 and radicals of the formula:



(II)

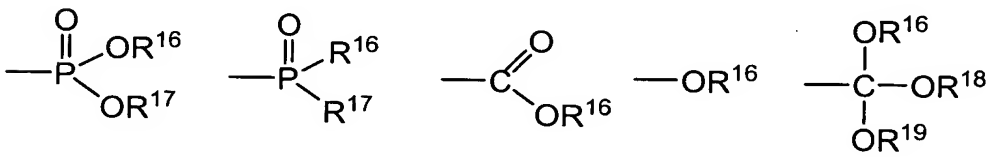
wherein:

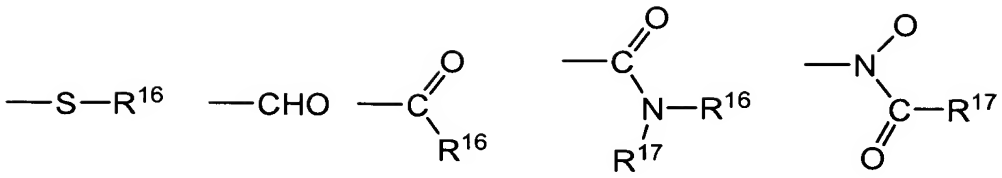
R^{11}, R^{12}, and R^{13} are each independently selected from the group consisting of H, alkyl, alkenyl, aryl, arylalkyl, alkoxy, alkylthio, alkenoxy, alkenylthio, aryloxy, arylthio, alkyl interrupted by oxa, alkenyl interrupted by oxa, alkyl interrupted by thia, alkenyl interrupted by thia, aryloxyalkyl, alkoxyaryl, aminoalkyl, aminoalkenyl, aminoaryl, aminoarylalkyl, hydroxyalkyl, hydroxyalkenyl, hydroxyaryl, hydroxyarylalkyl, and halogen-substituted versions thereof;

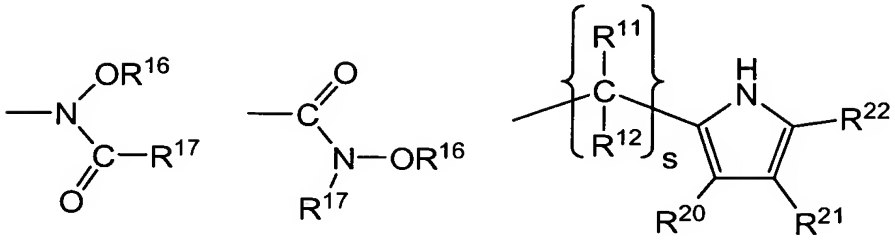
R^{14} is a member selected from the group consisting of H, hydroxy, amino, alkyl, alkyl interrupted by oxa, alkoxy, aryl, aryloxyalkyl, alkoxyaryl, alkoxyaryl, and halogen-substituted versions thereof;

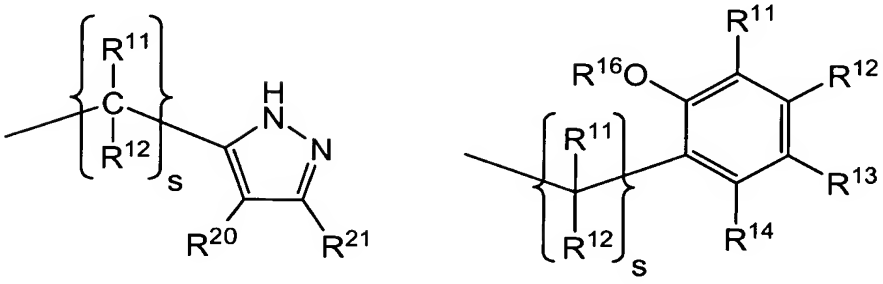
r is zero or 1; and

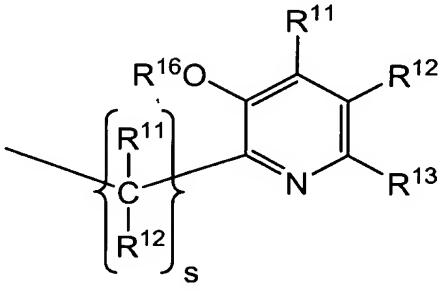
X is a member selected from the group consisting of alkyl, alkenyl, aryl, arylalkyl, alkoxy, alkylthio, alkenoxy, alkenylthio, aryloxy, arylthio, alkyl interrupted by oxa, alkenyl interrupted by oxa, alkyl interrupted by thia, alkenyl interrupted by thia, aryloxyalkyl, alkoxyaryl, aminoalkyl, aminoalkenyl, aminoaryl, aminoarylalkyl, hydroxyalkyl, hydroxyalkenyl, hydroxyaryl, hydroxyarylalkyl, halogen-substituted versions thereof, and radicals selected form the group consisting of:



39 

40 

41 

42 and 

43 wherein,

44 R^{11}, R^{12}, R^{13} and R^{14} are each independently as defined above;

45 R^{16} and R^{17} are each independently selected from the group

46 consisting of H, alkyl and aryl, or taken together form a

47 ring structure;

48 R^{18} and R^{19} are each independently selected from the group

49 consisting of H, alkyl, aryl, alkoxy, alkyl interrupted by

50 oxa, aryloxyalkyl, alkoxyaryl, and halogen-substituted

51 versions thereof;

52 R^{20}, R^{21} and R^{22} are each independently selected from the

53 group consisting of H, alkyl, alkenyl, aryl, arylalkyl,

54 alkoxy, alkylthio, alkenyloxy, allkenylthio, aryloxy,

aminoalkyl, aminoalkenyl, aminoaryl, aminoarylakyl, hydroxyalkyl, hydroxyalkenyl, hydroxyaryl, and hydroxyarylalkyl; and

s is an integer of from 1 to 3,

and wherein, optionally, any two of R^1, R^2, and R^3 are combined to form a ring structure;

and dimers of Formula I, said dimers being formed by the covalent attachment of two complexing agents of Formula I through a linking group having from 1 to 6 carbon atoms; and physiological salts thereof.

3. The pharmaceutical composition of claim **2** wherein m, n, and p are each 2.

4. The pharmaceutical composition of claim **2** wherein q is 1.

5. The pharmaceutical composition of claim **2** wherein said cation is calcium.

6. The pharmaceutical composition of claim **2** wherein m, n, and p are each 2, q is 1, and said cation is calcium.

7. The pharmaceutical composition of claim **2** wherein all alkyl are C_1-C_4 alkyl.

8. The pharmaceutical composition of claim **2** wherein all alkyl are C_1-C_4 alkyl, all alkenyl are vinyl, all aryl are phenyl, all aralkyl are phenethyl or benzyl, all cycloalkyl are cyclopentyl or cyclohexyl, and all halogens are chlorine or fluorine.

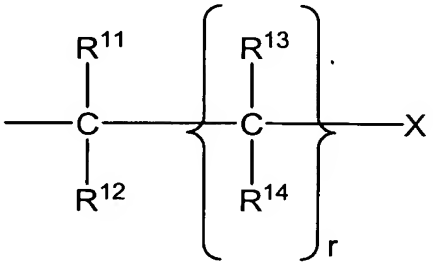
9. The pharmaceutical composition of claim **2** wherein R^2 and R^3 are each independently selected from the group consisting of H, alkyl, alkenyl, aryl, and aralkyl.

10. The pharmaceutical composition of claim **2** wherein R^2 and R^3 are each independently selected from the group consisting of H and C_1-C_4 alkyl.

11. The pharmaceutical composition of claim 2 wherein R^2 and R^3 are each H.

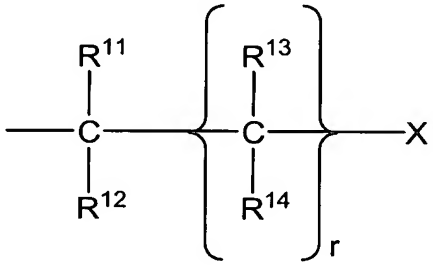
12. The pharmaceutical composition of claim 2 wherein R^2 and R^3 are each H and q is 1.

13. The pharmaceutical composition of claim 2 wherein R^1 is



(II)

14. The pharmaceutical composition of claim 2 wherein q is 1, said cation is calcium, and R^1 is



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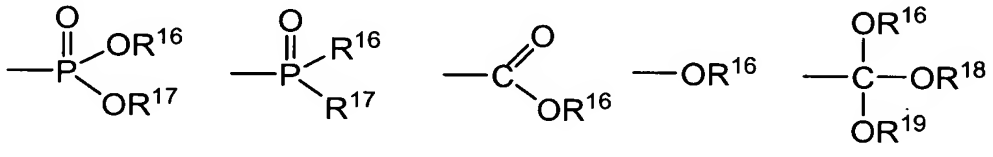
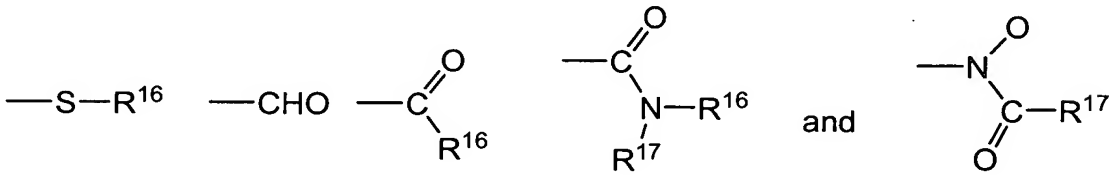
15. The pharmaceutical composition of claim 14 wherein X is a member selected from the group consisting of alkyl, alkenyl, aryl, arylalkyl, and radicals selected from the group consisting of:

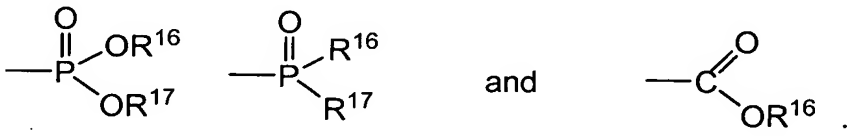




and

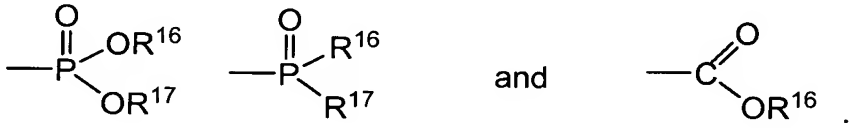
16. The pharmaceutical composition of claim 15 wherein R^{16}, R^{17}, R^{18}, and R^{19} are independently selected from the group consisting of H and C_1-C_4 alkyl.

17. The pharmaceutical composition of claim 14 wherein X is a member selected from the group consisting of alkyl, alkenyl, aryl, arylalkyl, and radicals selected from the group consisting of:



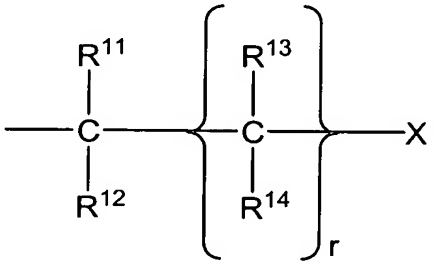
18. The pharmaceutical composition of claim 17 wherein R^{16} and R^{17} are independently selected from the group consisting of H and C_1-C_4 alkyl.

19. The pharmaceutical composition of claim 14 wherein X is a member selected from the group consisting of:



20. The pharmaceutical composition of claim 19 wherein R^{16} and R^{17} are independently selected from the group consisting of H and C_1-C_4 alkyl.

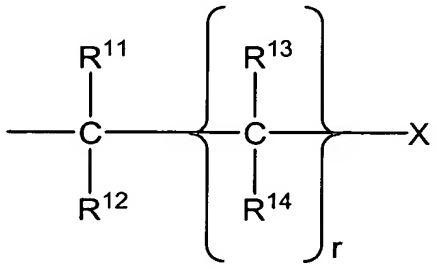
21. The pharmaceutical composition of claim 2 wherein R^2 and R^3 are each independently selected from the group consisting of H, alkyl, alkenyl, aryl, and aralkyl, and R^1 is a member selected from the group consisting of H, alkyl, alkenyl, aryl, aralkyl, and



(II)

in which R^{11}, R^{12}, and R^{13} are each independently selected from the group consisting of H, alkyl, alkenyl, aryl, and arylalkyl, and R^{14} is a member selected from the group consisting of H, hydroxy, amino, and alkyl.

22. The pharmaceutical composition of claim **2** wherein R^1 is



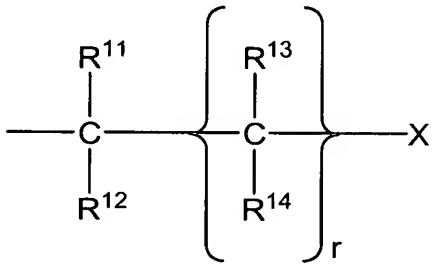
(II)

,

in which R^{11}, R^{12}, and R^{13} are each independently selected from the group consisting of H, alkyl, alkenyl, aryl, and arylalkyl, and R^{14} is a member selected from the group consisting of H, hydroxy, amino, and alkyl.

23. The pharmaceutical composition of claim **2** wherein:

R^1 is



(II)

,

in which R^{11}, R^{12}, and R^{13} are each independently selected from the group consisting of H and C_1-C_4 alkyl, R^{14} is a member selected from the group consisting of H and C_1-C_4 alkyl, and X is a member selected from the group consisting of

and

in which R^{16} and R^{17} are each independently H or C_1-C_4 alkyl;

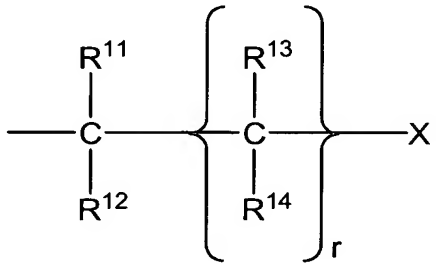
R^2 and R^3 are each independently selected from the group consisting of H and C_1-C_4 alkyl;

m, n, and p are each 2;

q is 1; and

said cation is calcium.

24. The pharmaceutical composition of claim **2** wherein R^1 is



(II)

in which R^{11}, R^{12}, and R^{13} are each independently selected from the group consisting of H and C_1-C_4 alkyl, and R^{14} is a member selected from the group consisting of H and C_1-C_4 alkyl.

25. The pharmaceutical composition of claim **2** wherein R^1 is dihydroxyphosphorylmethyl, R^2 is H, R^3 is H, m is 2, n is 2, p is 2, and q is 1.

26. The pharmaceutical composition of claim **25** in which said cation is calcium.

27. A method for enhancing the biological activity of a cyclic polyaza chelator having complexing affinity for first transition series elements, said method comprising administering said chelator as a complex with a cation selected from the group consisting of calcium and magnesium.

28. The method of claim **27** in which said cation is calcium.

29. A method for providing neuroprotection or cardioprotection in a patient, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **1**.

30. A method for mitigating damage to the central nervous system of a patient suffering from ischemic stroke, seizure or trauma, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **1**.

31. A method for mitigating damage to the heart of a patient suffering a heart attack or arrhythmia, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **1**.

32. A method for mitigating ischemia or ischemia-reperfusion injury in a patient, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **1**.

33. A method for mitigating ischemia or ischemia-reperfusion injury in a patient that has undergone cardiopulmonary bypass, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **1**.

34. A method for mitigating ischemia or ischemia-reperfusion injury in a patient that has undergone vascular surgery, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **1**.

35. A method for mitigating ischemia or ischemia-reperfusion injury in transplanted tissue in a patient that has undergone tissue transplant, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **1**.

36. A method for providing neuroprotection or cardioprotection in a patient, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **2**.

37. A method for enhancing the biological activity of a cyclic polyaza chelator having complexing affinity for first transition series elements, said method comprising administering said chelator as a pharmaceutical composition of claim **2**.

38. A method for mitigating ischemia or ischemia-reperfusion injury in a patient, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **2**.

39. A method for mitigating damage to the central nervous system of a patient suffering from ischemic stroke, seizure or trauma, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **2**.

40. A method for mitigating damage to the heart of a patient suffering a heart attack or arrhythmia, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **2**.

41. A method for enhancing the biological activity of a cyclic polyaza chelator having complexing affinity for first transition series elements, said method comprising administering said chelator as a pharmaceutical composition of claim **23**.

42. A method for mitigating ischemia or ischemia-reperfusion injury in a patient, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **23**.

43. A method for providing neuroprotection or cardioprotection in a patient, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **23**.

44. A method for mitigating damage to the central nervous system of a patient suffering from ischemic stroke, seizure or trauma, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **23**.

45. A method for mitigating damage to the heart of a patient suffering a heart attack or arrhythmia, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **23**.

46. A method for enhancing the biological activity of a cyclic polyaza chelator having complexing affinity for first transition series elements, said method comprising administering said chelator as a pharmaceutical composition of claim **25**.

47. A method for mitigating ischemia or ischemia-reperfusion injury in a patient, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **25**.

48. A method for providing neuroprotection or cardioprotection in a patient, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **25**.

49. A method for mitigating damage to the central nervous system of a patient suffering from ischemic stroke, seizure or trauma, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **25**.

50. A method for mitigating damage to the heart of a patient suffering a heart attack or arrhythmia, said method comprising administering to said patient an effective amount of a pharmaceutical composition of claim **25**.